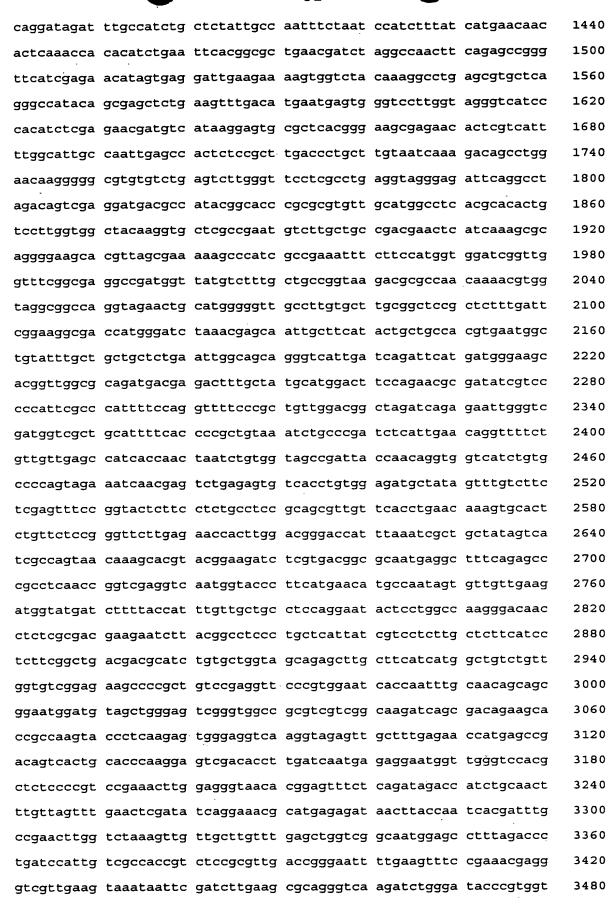
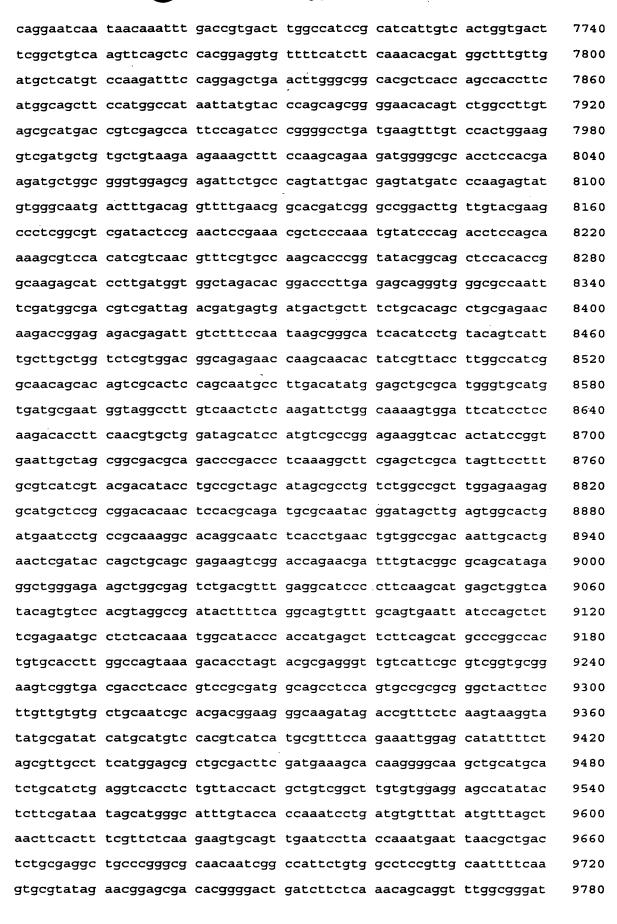
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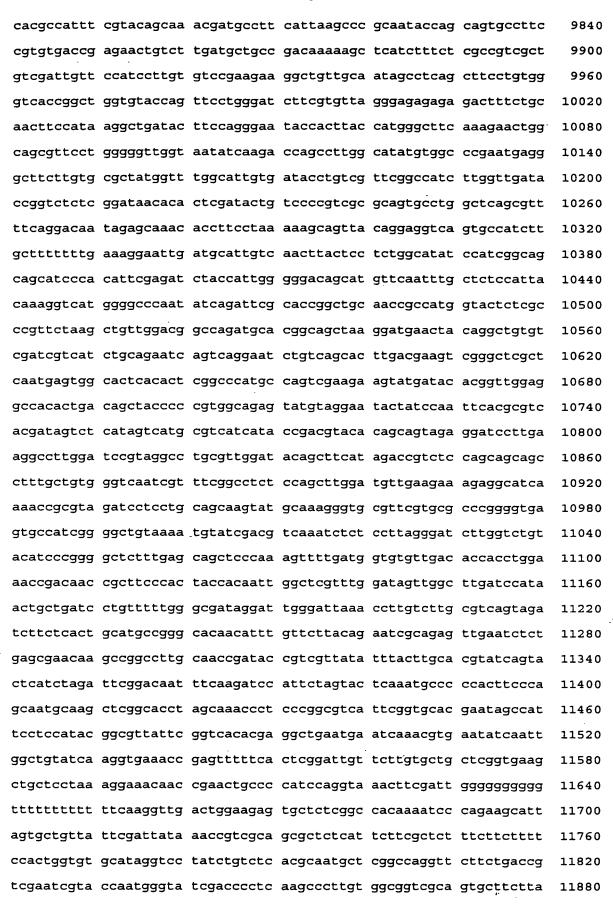
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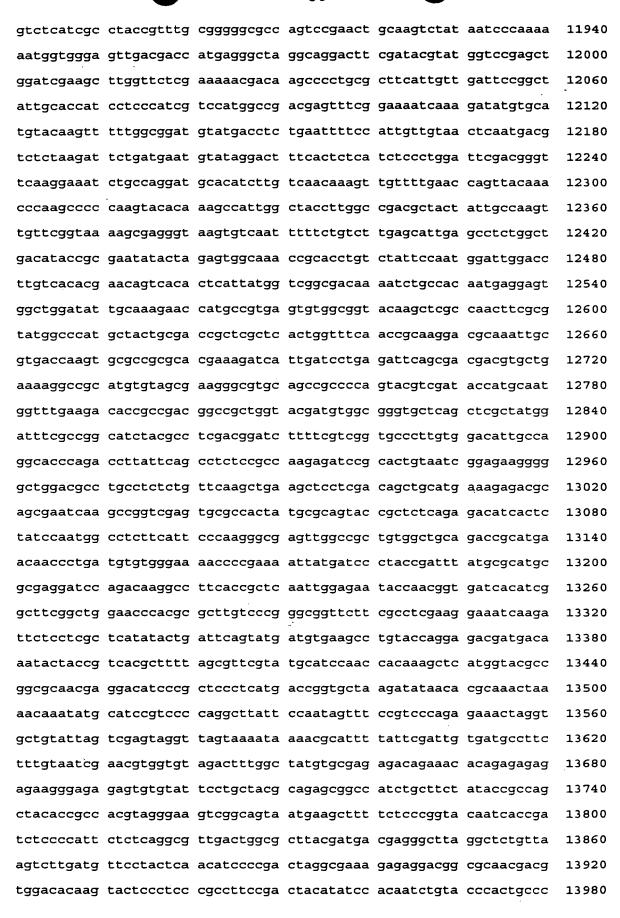






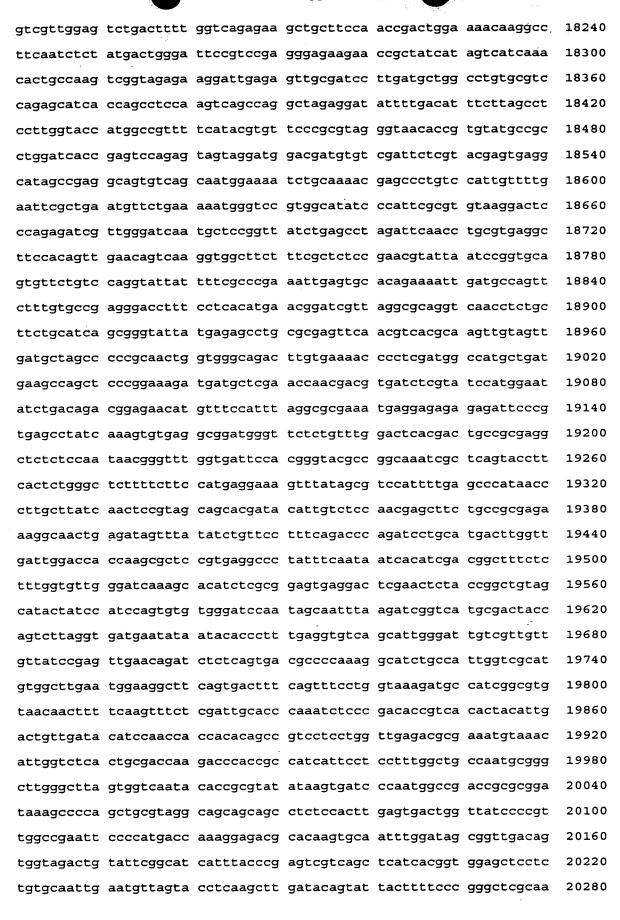










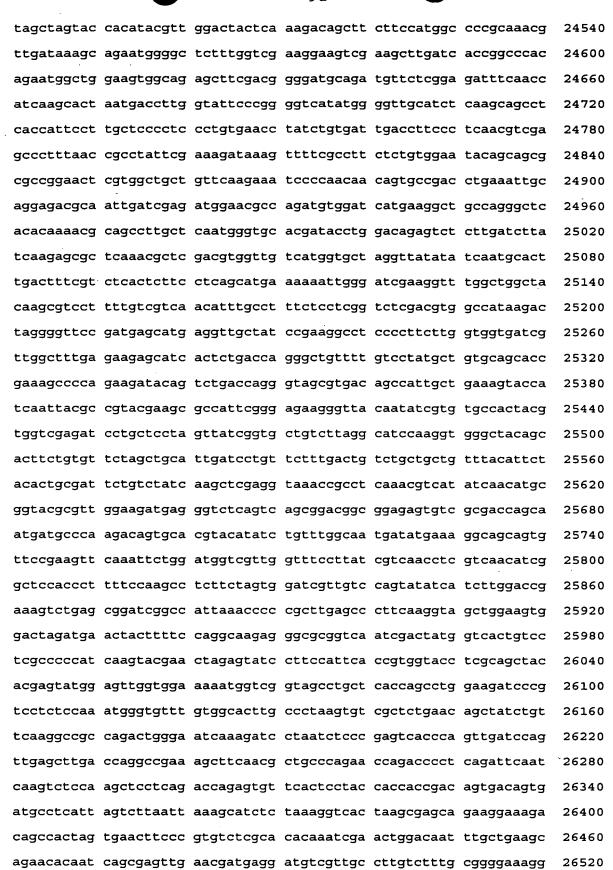






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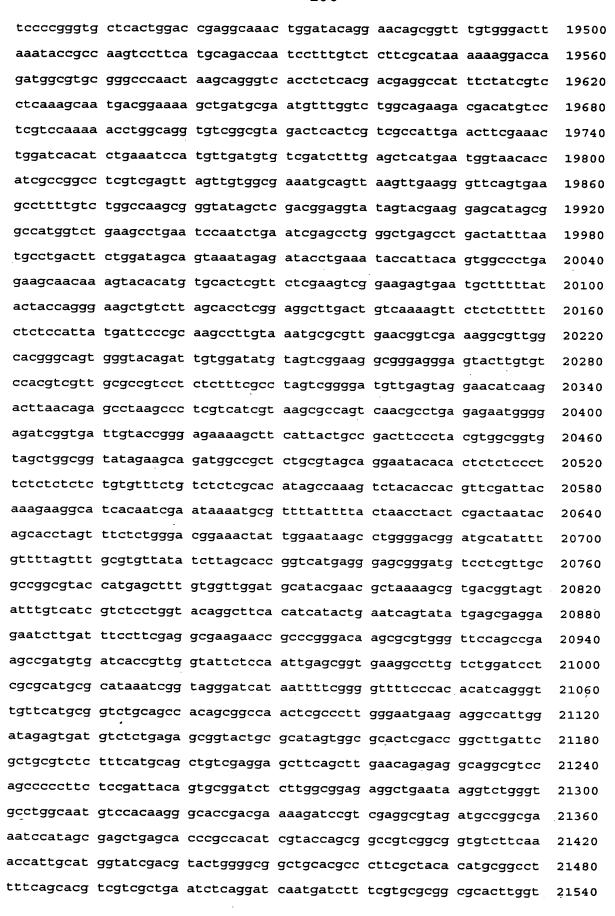




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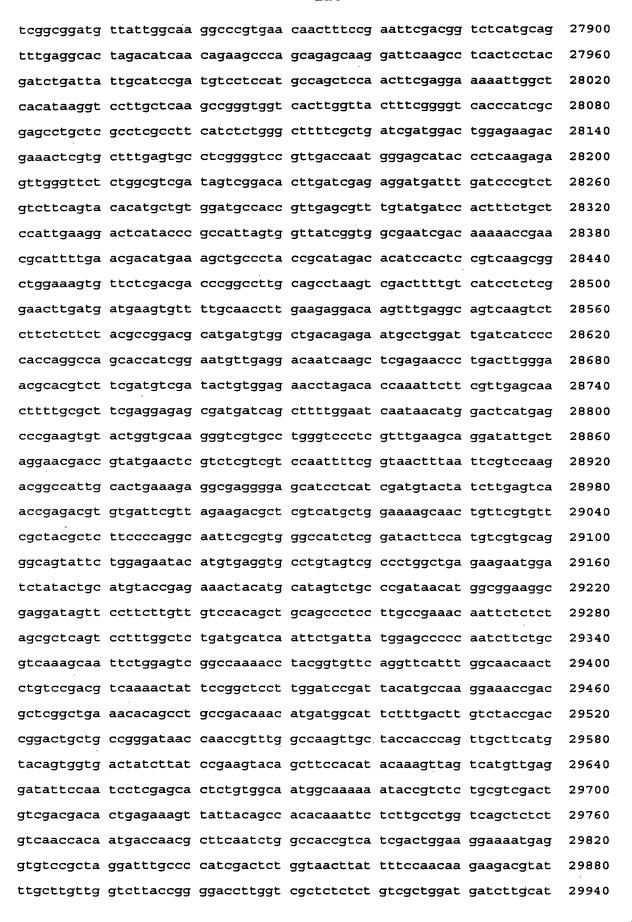


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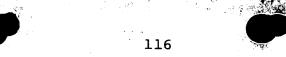
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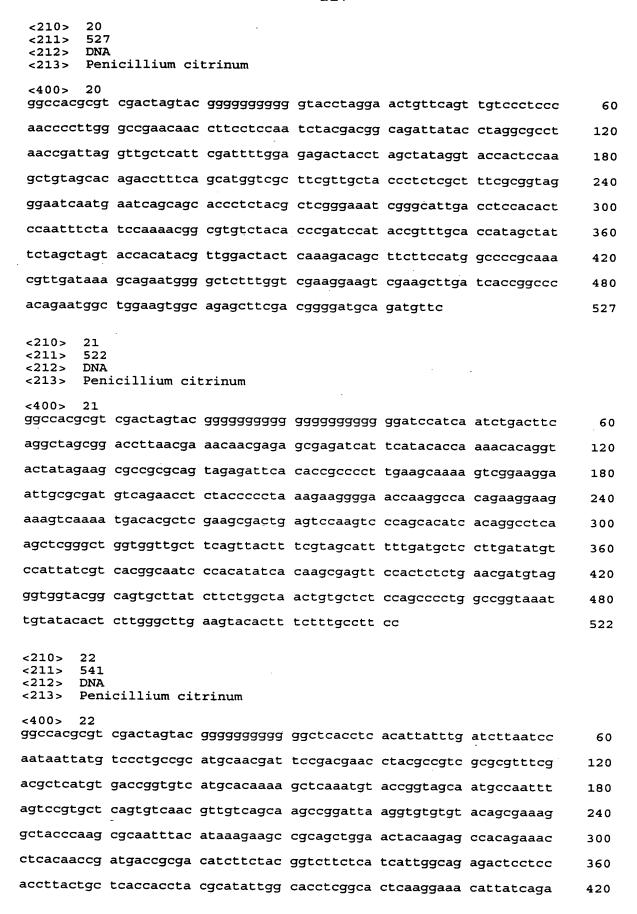
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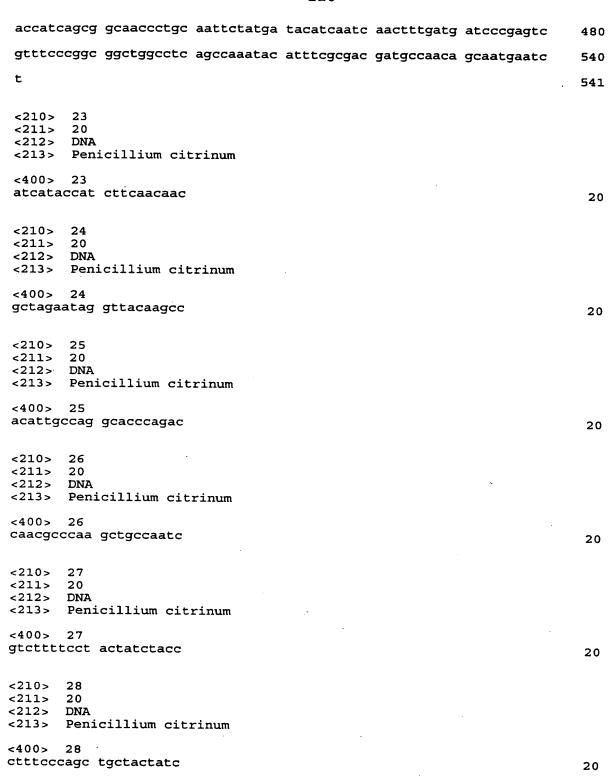


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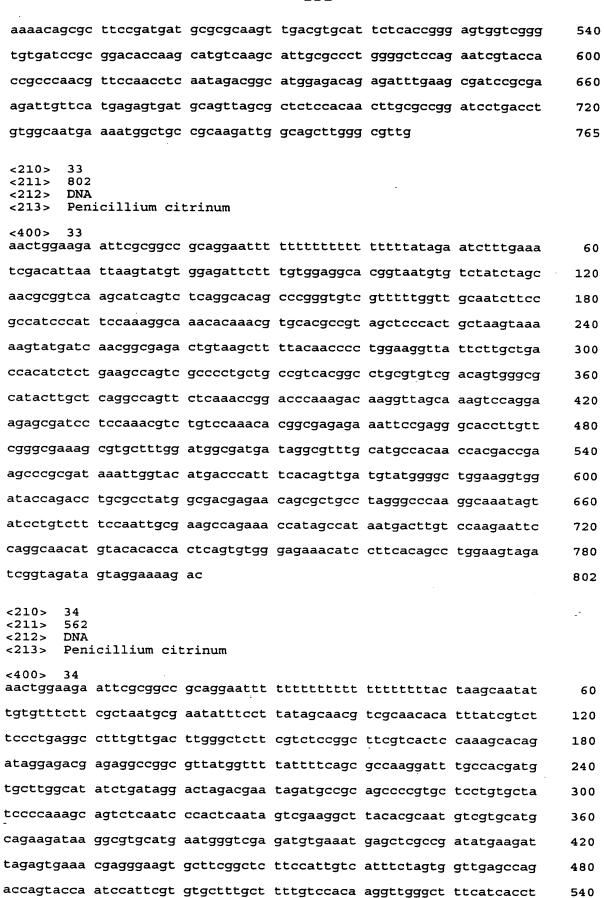


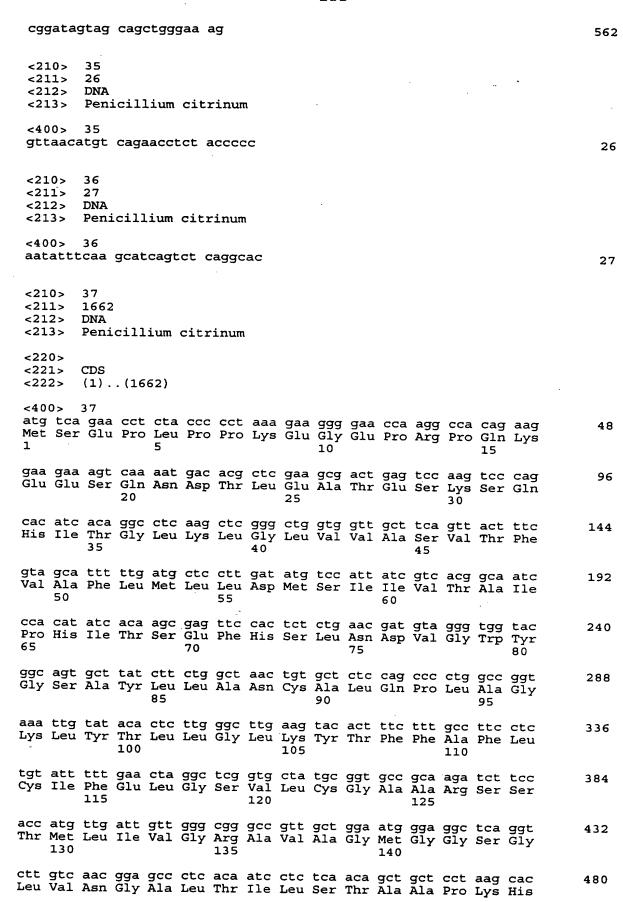


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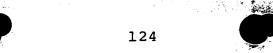
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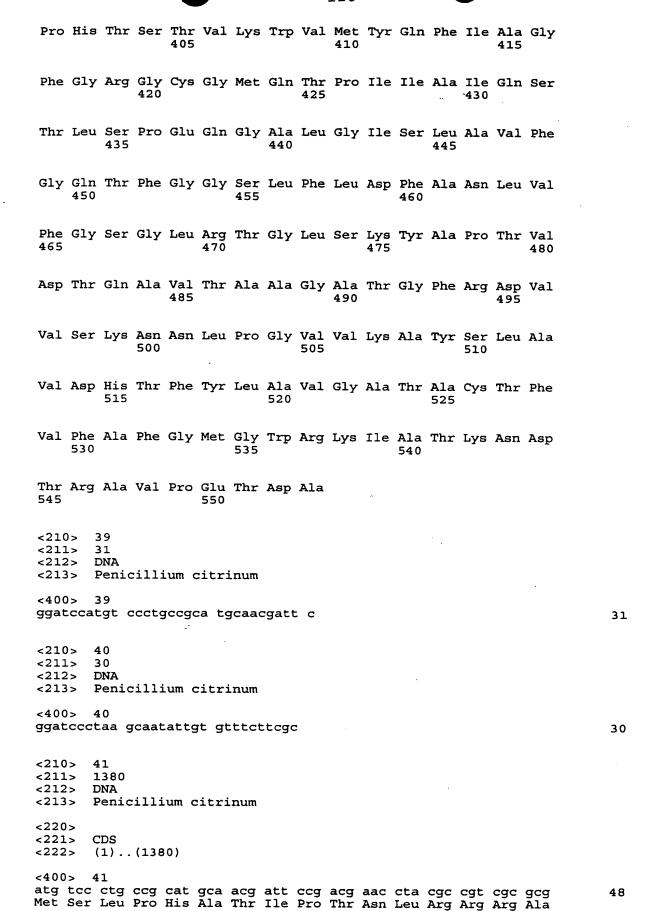
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125

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129

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<213> Penicillium citrinum

<220>

<221> CDS

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ggt	tgt	cgg	ttt	cca	ggt	ggt	gtc	aac	aca	cca	tca	aaa	ctt	tgg	gag	96
Gly	Cys	Arg	Phe	Pro	Gly	Gly	Val	Asn	Thr	Pro	Ser	Lys	Leu	Trp	Glu	
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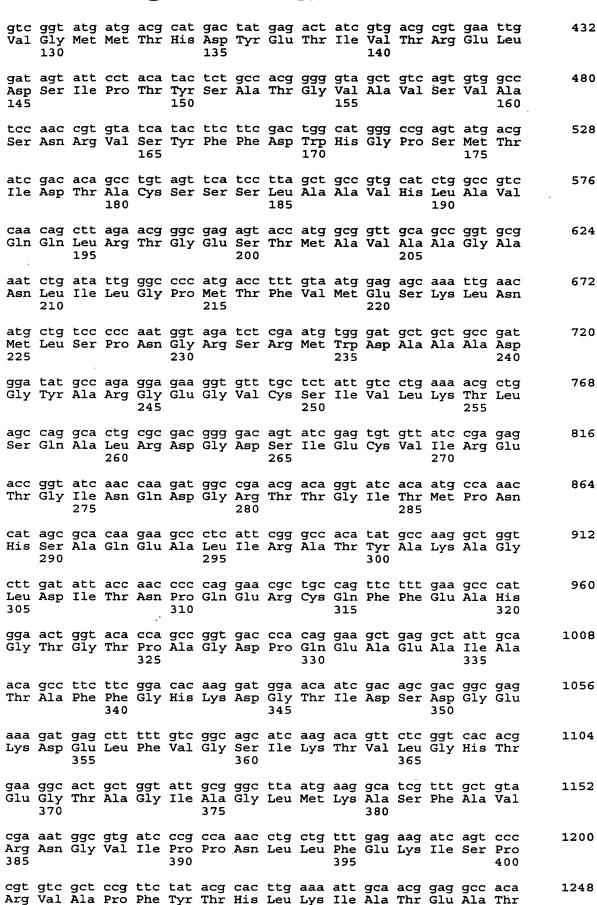
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65					70	_				75	_		_	_	9.0	

				•												
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Asp	Ala	Ser	Phe	Phe	Asn	Ile	Gln	Ala	Gly	Glu	Ala	Glu	Thr	Ile	Asp	
				Ω 5					90					9 5		

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PIO	GIII	GIII	Arg	nea	neu	Leu	GIU	TIIL	vai	TÄT	GIU	Ala	vai	ser	ASII	
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cgg Arg	tct Ser	atc Ile 515	ttg Leu	ccc Pro	ttc Phe	cgt Arg	cgt Arg 520	gcg Ala	att Ile	gca Ala	gca Ala	cac His 525	aac Asn	aag Lys	gaa Glu	15	84
					ctg Leu											16	32
acc Thr 545	gac Asp	ttc Phe	cgc Arg	acc Thr	gac Asp 550	gcg Ala	aat Asn	gac Asp	aac Asn	cct Pro 555	cgc Arg	gta Val	cta Leu	ggt Gly	gtc Val 560	16	80
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ctg Leu	caa Gln	aca Thr 595	ctg Leu	cct Pro	gaa Glu	aag Lys	tat Tyr 600	cgg Arg	cct Pro	acg Thr	tgg Trp	aca Thr 605	ctg Leu	tat Tyr	gac Asp	18	24
cag Gln	ctc Leu 610	atg Met	ctt Leu	gaa Glu	gly aaa	gat Asp 615	gcc Ala	tca Ser	aac Asn	gtc Val	aga Arg 620	ctc Leu	gcc Ala	agc Ser	ttc Phe	18	72
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gag Glu	att Ile	gcc Ala	tgt Cys 660	gcc Ala	ttt Phe	gcg Ala	gca Ala	gga Gly 665	ttc Phe	atc Ile	agt Ser	gcc Ala	act Thr 670	caa Gln	gct Ala	20	16
atc Ile	cgt Arg	att Ile 675	gcg Ala	cat His	ctg Leu	cgt Arg	gga Gly 680	gtt Val	gtg Val	tcc Ser	gcg Ala	gag Glu 685	cat His	gcc Ala	tct Ser	20:	64





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cys Cys	gtc Val	gcc Ala	gct Ala	agc Ser 725	aat Asn	tca Ser	ccg Pro	gat Asp	agt Ser 730	gtg Val	acc Thr	ttc Phe	tcc Ser	ggc Gly 735	gac Asp		2208
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gct Ala 865	ctt Leu	gcc Ala	ggt Gly	gtg Val	gag Glu 870	ctg Leu	ccg Pro	tat Tyr	acc Thr	999 Gly 875	tgc Cys	ttg Leu	gca Ala	cga Arg	aac Asn 880	:	2640
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tct Ser	tgg Trp 930	gat Asp	cat His	act Thr	cgt Arg	caa Gln 935	tac Tyr	tgg Trp	gca Ala	gaa Glu	tct Ser 940	cgc Arg	tcc Ser	acc Thr	cgc Arg	2	2832
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965 970 975

cgg Arg	gat Asp	ctg Leu	gaa Glu 980	tgg Trp	ctc Leu	gac g Asp G	ly H	at g is A 85	icg c	ta c eu G	aa gg ln Gl	y Gl 99	n Th	t gtg r Val	2976
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gca Ala	aag Lys 1070	Glu	agt Ser	gag Glu	ctt Leu	tcg Ser 1075	aca Thr	tcc Ser	gcc Ala	aaa Lys	ggc Gly 1080	Gln	atc Ile	gtc Val	3249
	acc Thr 1085	Leu	ggc	gag Glu	gca Ala	tca Ser 1090	ccg Pro	tca Ser	tcg Ser	cag Gln	ctt Leu 1095	Leu		cca Pro	3294
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	tat Tyr 1115	Arg	gaa Glu	ctt Leu	gac Asp	ctc Leu 1120	ctt Leu	ggg Gly	tat Tyr	gac Asp	tac Tyr 1125		aaa Lys	gac Asp	3384
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ggc Gly	acc Thr 1145	ttg Leu	gct Ala	ttc Phe	ctt Leu	cca Pro 1150	ctt Leu	aag Lys	gat Asp	gaa Glu	ttg Leu 1155	cgc Arg	aat Asn	gag Glu	3474
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ctc Leu	tgt Cys 1205	ata Ile	tcg Ser	gcg Ala	ggt Gly	aat Asn 1210	tct Ser	ggt Gly	gaa Glu	acc Thr	gag Glu 1215	ctt Leu	gcg Ala	ttt Phe	3654
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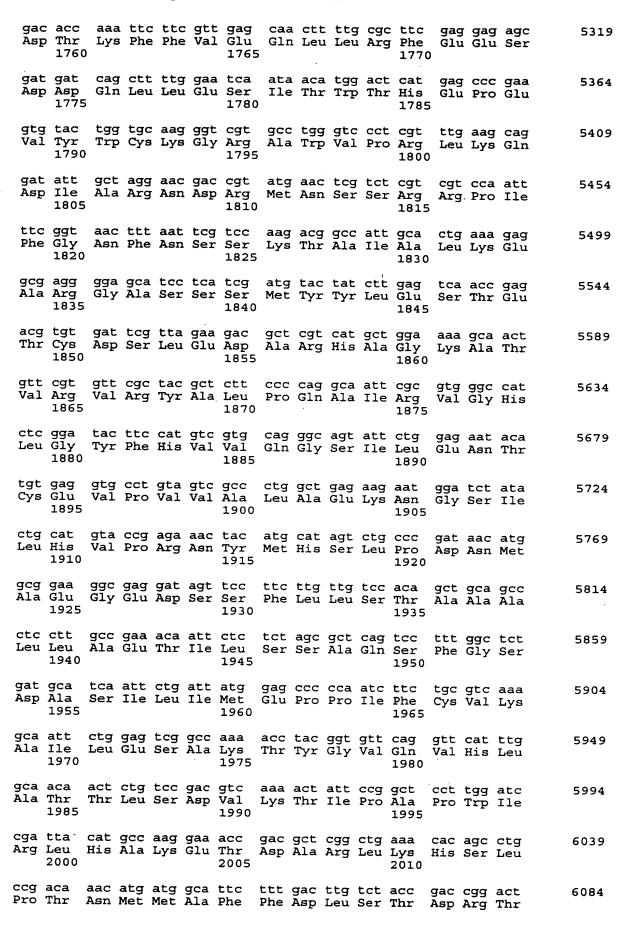




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I	etc Leu	cat His 1325		c ca c Gl	g aa n Ly	g ta s Ty:	c att r Ile 1330	GIL	a tgg ı Tr <u>p</u>	g tgt o Cys	t gad s Asj	c cag p Gln 133	۷a	t ca l Gl	g g n A	cc la	401	L 4
•	ЮÞ	1340	nr.	, AT	a G1	у пт	c cat s His 1345	GII	ı Trp	о Туг	Glı	1350	Se:	r Tr	p G	lu	405	59
	-u	1355	1111	. <i>5</i> e.	L Va.	I Hls	att Ile 1360	GIU	ı Gİn	ı Met	: Cys	1369	Se:	r Ası	n Se	er	410	4
		1370		****	y va.	. ALG	ctg Leu 1375	i	caa Gln	agg Arg	gta Val	ggc 1380	Lys	a gaa s Glu	a tt u Le	ta eu	414	9
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A:		gat Asp 1400	Gly	tto Lev	tto Phe	acc Thr	gag Glu 1405	Tyr	tat Tyr	Thr	Asn	aag Lys 1410	Leu	gco Ala	tt a Ph	t ie	423	9
G:	-, .	ca Ser 1415	gca Ala	ata Ile	cac His	gtc Val	gtt Val 1420	Gin	gat Asp	ctg Leu	gtt Val	agc Ser 1425	Gln	att	gc Al	t .a	4284	4
Ca Hi		egc Arg 1430	tac Tyr	caa Gln	tcc Ser	att Ile	gat Asp 1435	atc Ile	ctt Leu	gag Glu	atc Ile	ggc Gly 1440	Leu	ggt Gly	ac Th	a r	4329	9
G1	- 7 -	tc le .445	gcc Ala	acg Thr	aag Lys	cgc Arg	gtt Val 1450	ctt Leu	gca Ala	tca Ser	cct Pro	caa Gln 1455	ctt Leu	ggt Gly	tt Ph	c e	4374	1
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gc Al	a c a L	ta q eu <i>i</i>	gac Asp	atc Ile	aac Asn	aga Arg	agc Ser	cca Pro	gca Ala	gag Glu	caa Gln	gga Gly	ttc Phe	aag Lys	cct Pro	5	4509)



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	tgg Trp 1580													gat Asp	4779
	cgg Arg 1595												gtc Val		4824
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	tct Ser 1625														4914
	ggc Gly 1640										aac Asn 1650		atg Met		4959
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agt Ser	gtt Val 1670	ctc Leu	gac Asp	gac Asp	ccg Pro	gcc Ala 1675	ttg Leu	cag Gln	cct Pro	aag Lys	tcg Ser 1680	act Thr	ttt Phe	gtc Val	5049
	ctc Leu 1685														5094
gac Asp	aag Lys 1700	ttt Phe	gag Glu	gca Ala	gtc Val	aag Lys 1705	tct Ser	ctt Leu	ctc Leu	ttc Phe	tac Tyr 1710	gcc Ala	gga Gly	cgc Arg	5139
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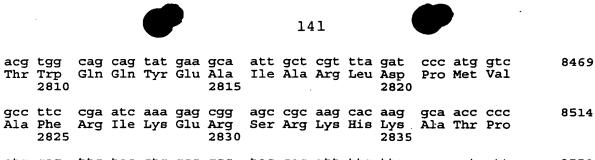


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gtc Val	atc Ile 2120	Asp	tgg Trp	aag Lys	gaa Glu	aat Asn 2125	Glu	gtg Val	tcc Ser	gct Ala	agg Arg 2130	Ile	tgc Cys	ccc Pro	6399	
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	ggc Gly 2420	gac Asp	aat Asn	gga Gly	tca Ser	ggg Gly 2425	tct Ser	aaa Lys	ggc Gly	tcc Ser	att Ile 2430	gcc Ala	gac Asp		72	99
ctc Leu	aaa Lys 2435	caa Gln	gca Ala	aca Thr	act Thr	tta Leu 2440	gac Asp	caa Gln	gtt Val	cgg Arg	caa Gln 2445	atc Ile	gtg Val		73	44
gat Asp	ggt Gly 2450	cta Leu	tct Ser	gag Glu	aaa Lys	ctc Leu 2455	cgt Arg	gtt Val	acc Thr	ctc Leu	caa Gln 2460	gtt Val	tcg Ser	gac Asp	73	89
ggg	gag Glu 2465	agc Ser	gtg Val	gac Asp	cca Pro	acc Thr 2470	att Ile	cct Pro	ctc Leu	att Ile	gat Asp 2475	caa Gln	ggt Gly	gtc Val	74	34
_	tcc Ser 2480	ttg Leu	ggt Gly	gca Ala	gtg Val	act Thr 2485	gtc Val	ggc Gly	tca Ser	tgg Trp	ttc Phe 2490		aag Lys		74	79
ctc Leu	tac Tyr 2495	ctt Leu	gac Asp	ctc Leu	cca Pro	ctc Leu 2500	ttg Leu	agg Arg	gta Val	ctt Leu	ggc Gly 2505	ggt Gly	gct Ala	tct Ser	75	24
gtc Val	gct Ala 2510	gat Asp	ctt Leu	gcc Ala	gac Asp	gac Asp 2515	gcg Ala	gcc Ala	acc Thr	cga Arg	ctc Leu 2520	cca Pro	gct Ala	aca Thr	75	69
tcc Ser	att Ile 2525	ccg Pro	ctg Leu	ctg Leu	ttg Leu	caa Gln 2530	att Ile	ggt Gly	gat Asp	tcc Ser	acg Thr 2535	gga Gly	acc Thr	tcg Ser	76	14
	agc Ser	gly aaa	gct Ala	tct Ser	ccg Pro	aca Thr	cca Pro	aca Thr	gac Asp	agc Ser	cat His	gat Asp	gaa Glu	gca Ala	76	59



2540				2545					2550					
agc tct Ser Ser 2555	gct ac Ala Th	c agc a r Ser '	Thr	gat Asp 2560	gcg Ala	tcg Ser	tca Ser	gcc Ala	gaa Glu 2565	gag Glu	gat Asp	gaa Glu	•	7704
gag caa Glu Gln 2570	gag ga Glu As	c gat a p Asp i	Asn	gag Glu 2575	cag Gln	gga Gly	ggc Gly	cgt Arg	aag Lys 2580	att Ile	ctt Leu	cgt Arg	•	7749
cgc gag Arg Glu 2585	Arg Le	g tcc (u Ser)	Leu	ggc Gly 2590	cag Gln	gag Glu	tat Tyr	tcc Ser	tgg Trp 2595	agg Arg	cag Gln	caa Gln		7794
caa atg Gln Met 2600	Val Ly	a gat (s Asp)	His	acc Thr 2605	atc Ile	ttc Phe	aac Asn	aac Asn	act Thr 2610	att Ile	ggc Gly	atg Met	,	7839
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aaa gcc Lys Ala 2630	Ser Le		Arg											7929
act ggc Thr Gly 2645	Asp As	c tat p Tyr	agc Ser	agc Ser 2650	gat Asp	tta Leu	aat Asn	ggt Gly	ccc Pro 2655	gtc Val	caa Gln	gtg Val		7974
gtt ctc Val Leu 2660	Lys As	c ccg	gag Glu	aac Asn 2665	aga Arg	gtg Val	cac His	ttt Phe	gtt Val 2670	cag Gln	gtg Val	aac Asn		8019
aac gct Asn Ala 2675	Ala Gl													8064
aac tat Asn Tyr 2690	Ser Il	c tcc e Ser	aca Thr	ggt Gly 2695	gac Asp	act Thr	ctc Leu	aga Arg	ctc Leu 2700	gtt Val	gat Asp	ttc Phe	-	8109
tac tgg Tyr Trp 2705	Gly Th	a gat r Asp	gac Asp	cac His 2710	ctg Leu	ttg Leu	gta Val	atc Ile	ggc Gly 2715	tac Tyr	cac His	aga Arg		8154
tta gtt Leu Val 2720	Gly As													8199
ggg cag Gly Gln 2735		c agc r Ser	G1y ggg	gtg Val 2740	aaa Lys	atg Met	cag Gln	cga Arg	cca Pro 2745	tcg Ser	acc Thr	caa Gln		8244
ttc tct Phe Ser 2750	Asp Le	a gcc u Ala	gtc Val	caa Gln 2755	cag Gln	cgg Arg	gaa Glu	aac Asn	ctg Leu 2760	gaa Glu	aat Asn	gly ggg		8289
cga atg Arg Met 2765	ggg ga Gly As	c gat p Asp	atc Ile	gcg Ala 2770	ttc Phe	tgg Trp	aag Lys	tcc Ser	atg Met 2775	His	agc Ser	aaa Lys		8334
gtc tcg Val Ser 2780	Ser Se	t gcg r Ala	cca Pro	acc Thr 2785	gtg Val	ctt Leu	ccc Pro	atc Ile	atg Met 2790	aat Asn	ctg Leu	atc Ile		8379
aat gac Asn Asp 2795		t gcc a Ala	aat Asn	tca Ser 2800	gag Glu	cag Gln	cag Gln	caa Gln	ata Ile 2805	cag Gln	cca Pro	ttc Phe		8424



	2810	U	J	-7-		2815				200	2820	110		· u 2	
						cgg Arg 2830									8514
atg Met	cag Gln 2840	ttc Phe	tac Tyr	ctg Leu	gcc Ala	gcc Ala 2845	tac Tyr	cac His	gtt Val	ttg Leu	ttg Leu 2850	gcg Ala	cgt Arg	ctt Leu	8559
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ctt Leu	ccc Pro 2885	ctg Leu	cgc Arg	ttt Phe	gat Asp	gag Glu 2890	ttc Phe	gtc Val	ggc Gly	agc Ser	aag Lys 2895	aca Thr	ttc Phe		8694
gag Glu	cac His 2900	ctt Leu	gta Val	gcc Ala	acc Thr	aag Lys 2905	gac Asp	agt Ser	gtg Val	cgt Arg	gag Glu 2910	gcc Ala	atg Met	caa Gln	8739
cac His	gcg Ala 2915	cgg Arg	gtg Val	ccg Pro	tat Tyr	ggc Gly 2920	gtc Val	atc Ile	ctc Leu	gac Asp	tgt Cys 2925	cta Leu	ggc Gly	ctg Leu	8784
aat Asn	ctc Leu 2930	cct Pro	acc Thr	tca Ser	ggc Gly	gag Glu 2935	gaa Glu	ccc Pro	aag Lys	act Thr	cag Gln 2940	aca Thr	cac His		8829
ccc Pro	ttg Leu 2945	ttc Phe	cag Gln	gct Ala	gtc Val	ttt Phe 2950	gat Asp	tac Tyr	aag Lys	cag Gln	ggt Gly 2955	caa Gln	gcg Ala	gag Glu	8874
agt Ser	ggc Gly 2960	tca Ser	att Ile	ggc Gly	aat Asn	gcc Ala 2965	aaa Lys	atg Met	acg Thr	agt Ser	gtt Val 2970		gct Ala		8919
cgt Arg	gag Glu 2975	Arg	act Thr	cct Pro	tat Tyr	gac Asp 2980	atc Ile	gtt Val	ctc Leu	gag Glu	atg Met 2985	tgg Trp	gat Asp	gac Asp	8964
	acc Thr 2990	aag Lys	gac Asp	cca Pro	ctc Leu	att Ile 2995	cat His	gtc Val	aaa Lys	ctt Leu	cag Gln 3000	agc Ser	tcg Ser	ctg Leu	9009
tat Tyr		cct Pro	gag Glu	cac His	gct Ala	cag Gln 3010	gcc Ala	ttt Phe	gta Val	gac Asp	cac His 3015	ttt Phe	tct Ser		9054
	ctc Leu 3020					atg Met 3025	aac Asn	ccg Pro	gct Ala	ctg Leu	aag Lys	Leu	gcc Ala	tag	9099

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3020

Met Asp Gln Ala Asn Tyr Pro Asn Glu Pro Ile Val Val Gly Ser
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3030

3025

<211> 3032

<212> PRT

<213> Penicillium citrinum

<400> 44





Gly Cys Arg Phe Pro Gly Gly Val Asn Thr Pro Ser Lys Leu Trp Glu 20 25 30

Leu Leu Lys Glu Pro Arg Asp Val Gln Thr Lys Ile Pro Lys Glu Arg

Phe Asp Val Asp Thr Phe Tyr Ser Pro Asp Gly Thr His Pro Gly Arg 50 60

Thr Asn Ala Pro Phe Ala Tyr Leu Leu Gln Glu Asp Leu Arg Gly Phe 65 70 75 80

Asp Ala Ser Phe Phe Asn Ile Gln Ala Gly Glu Ala Glu Thr Ile Asp 85 90 95

Pro Gln Gln Arg Leu Leu Glu Thr Val Tyr Glu Ala Val Ser Asn 100 105 110

Ala Gly Leu Arg Ile Gln Gly Leu Gln Gly Ser Ser Thr Ala Val Tyr 115 120 125

Val Gly Met Met Thr His Asp Tyr Glu Thr Ile Val Thr Arg Glu Leu 130 135 140

Asp Ser Ile Pro Thr Tyr Ser Ala Thr Gly Val Ala Val Ser Val Ala 145 150 155 160

Ser Asn Arg Val Ser Tyr Phe Phe Asp Trp His Gly Pro Ser Met Thr 165 170 175

Ile Asp Thr Ala Cys Ser Ser Ser Leu Ala Ala Val His Leu Ala Val 180 185 190

Gln Gln Leu Arg Thr Gly Glu Ser Thr Met Ala Val Ala Ala Gly Ala 195 200 205

Asn Leu Ile Leu Gly Pro Met Thr Phe Val Met Glu Ser Lys Leu Asn 210 215 220

Met Leu Ser Pro Asn Gly Arg Ser Arg Met Trp Asp Ala Ala Asp 225 230 235 240

Gly Tyr Ala Arg Gly Glu Gly Val Cys Ser Ile Val Leu Lys Thr Leu 245 250 255

Ser Gln Ala Leu Arg Asp Gly Asp Ser Ile Glu Cys Val Ile Arg Glu 260 265 270

Thr Gly Ile Asn Gln Asp Gly Arg Thr Thr Gly Ile Thr Met Pro Asn 275 280 285





His Ser Ala Gln Glu Ala Leu Ile Arg Ala Thr Tyr Ala Lys Ala Gly 290 295 300

Leu Asp Ile Thr Asn Pro Gln Glu Arg Cys Gln Phe Phe Glu Ala His 305 310 315 320

Gly Thr Gly Thr Pro Ala Gly Asp Pro Gln Glu Ala Glu Ala Ile Ala 325 330 335

Thr Ala Phe Phe Gly His Lys Asp Gly Thr Ile Asp Ser Asp Gly Glu 340 345 350

Lys Asp Glu Leu Phe Val Gly Ser Ile Lys Thr Val Leu Gly His Thr 355 360 365

Glu Gly Thr Ala Gly Ile Ala Gly Leu Met Lys Ala Ser Phe Ala Val 370 375 380

Arg Asn Gly Val Ile Pro Pro Asn Leu Leu Phe Glu Lys Ile Ser Pro 385 390 395 400

Arg Val Ala Pro Phe Tyr Thr His Leu Lys Ile Ala Thr Glu Ala Thr 405 410 415

Glu Trp Pro Ile Val Ala Pro Gly Gln Pro Arg Arg Val Ser Val Asn 420 425 430

Ser Phe Gly Phe Gly Gly Thr Asn Ala His Ala Ile Ile Glu Glu Tyr 435 440 445

Met Ala Pro Pro His Lys Pro Thr Ala Val Val Thr Glu Val Thr Ser 450 455 460

Asp Ala Asp Ala Cys Ser Leu Pro Leu Val Leu Ser Ser Lys Ser Gln 465 470 475 480

Arg Ser Met Lys Ala Thr Leu Glu Asn Met Leu Gln Phe Leu Glu Thr 485 490 495

His Asp Asp Val Asp Met His Asp Ile Ala Tyr Thr Leu Leu Glu Lys
500 505 510

Arg Ser Ile Leu Pro Phe Arg Arg Ala Ile Ala Ala His Asn Lys Glu 515 520 525

Val Ala Arg Ala Ala Leu Glu Ala Ala Ile Ala Asp Gly Glu Val Val 530 540

Thr Asp Phe Arg Thr Asp Ala Asn Asp Asn Pro Arg Val Leu Gly Val 545 550 555 560

Phe Thr Gly Gln Gly Ala Gln Trp Pro Gly Met Leu Lys Lys Leu Met 565 570 575



Val Gly Met Pro Phe Val Arg Gly Ile Leu Glu Glu Leu Asp Asn Ser 580 585

Leu Gln Thr Leu Pro Glu Lys Tyr Arg Pro Thr Trp Thr Leu Tyr Asp 595 600 605

Gln Leu Met Leu Glu Gly Asp Ala Ser Asn Val Arg Leu Ala Ser Phe 610 615 620

Ser Gln Pro Leu Cys Cys Ala Val Gln Ile Val Leu Val Arg Leu 625 630 635 640

Ala Ala Ala Gly Ile Glu Phe Ser Ala Ile Val Gly His Ser Ser Gly 645 650 655

Glu Ile Ala Cys Ala Phe Ala Ala Gly Phe Ile Ser Ala Thr Gln Ala 660 665 670

Ile Arg Ile Ala His Leu Arg Gly Val Val Ser Ala Glu His Ala Ser 675 680 685

Ser Pro Ser Gly Gln Thr Gly Ala Met Leu Ala Ala Gly Met Ser Tyr 690 695 700

Asp Asp Ala Lys Glu Leu Cys Glu Leu Glu Ala Phe Glu Gly Arg Val 705 710 715 720

Cys Val Ala Ala Ser Asn Ser Pro Asp Ser Val Thr Phe Ser Gly Asp 725 730 735

Met Asp Ala Ile Gln His Val Glu Gly Val Leu Glu Asp Glu Ser Thr 740 745 750

Phe Ala Arg Ile Leu Arg Val Asp Lys Ala Tyr His Ser His His Met 755 760 .765

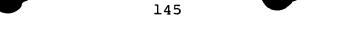
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Ala Val Ala Asp Gly Gln Gly Asn Asp Ser Val Ala Trp Phe Ser Ala 785 790 795 800

Val His Glu Thr Ser Lys Gln Met Thr Val Gln Asp Val Met Pro Ala 805 810 815

Tyr Trp Lys Asp Asn Leu Val Ser Pro Val Leu Phe Ser Gln Ala Val 820 825 830

Gln Lys Ala Val Ile Thr His Arg Leu Ile Asp Val Ala Ile Glu Ile 835 840 845



Gly Ala His Pro Ala Leu Lys Gly Pro Cys Leu Ala Thr Ile Lys Asp 850 855 860

Ala Leu Ala Gly Val Glu Leu Pro Tyr Thr Gly Cys Leu Ala Arg Asn 865 870 875 880

Val Asp Asp Val Asp Ala Phe Ala Gly Gly Leu Gly Tyr Ile Trp Glu 885 890 895

Arg Phe Gly Val Arg Ser Ile Asp Ala Glu Gly Phe Val Gln Gln Val 900 905 910

Arg Pro Asp Arg Ala Val Gln Asn Leu Ser Lys Ser Leu Pro Thr Tyr 915 920 925

Ser Trp Asp His Thr Arg Gln Tyr Trp Ala Glu Ser Arg Ser Thr Arg 930 935 940

Gln His Leu Arg Gly Gly Ala Pro His Leu Leu Gly Lys Leu Ser 945 950 955 960

Ser Tyr Ser Thr Ala Ser Thr Phe Gln Trp Thr Asn Phe Ile Arg Pro 965 970 975

Arg Asp Leu Glu Trp Leu Asp Gly His Ala Leu Gln Gly Gln Thr Val 980 985 990

Phe Pro Ala Ala Gly Tyr Ile Ile Met Ala Met Glu Ala Ala Met Lys 995 1000 1005

Val Ala Gly Glu Arg Ala Ala Gln Val Gln Leu Leu Glu Ile Leu 1010 1015 1020

Asp Met Ser Ile Asn Lys Ala Ile Val Phe Glu Asp Glu Asn Thr 1025 1030 1035

Ser Val Glu Leu Asn Leu Thr Ala Glu Val Thr Ser Asp Asn Asp 1040 1045 1050

Ala Asp Gly Gln Val Thr Val Lys Phe Val Ile Asp Ser Cys Leu 1055 1060 1065

Ala Lys Glu Ser Glu Leu Ser Thr Ser Ala Lys Gly Gln Ile Val 1070 1080

Ile Thr Leu Gly Glu Ala Ser Pro Ser Ser Gln Leu Pro Pro 1085 1090 1095

Pro Glu Glu Glu Tyr Pro Gln Met Asn Asn Val Asn Ile Asp Phe 1100 1105 1110

Phe Tyr Arg Glu Leu Asp Leu Leu Gly Tyr Asp Tyr Ser Lys Asp 1115 1120 1125







Phe	Arg 1130		Leu	Gln	Thr	Met 1135		Arg	Ala	Asp	Ser 1140		Ala	Ser
Gly	Thr 1145		Ala	Phe	Leu	Pro 1150	Leu	Lys	Asp	Glu	Leu 1155		Asn	Glu
Pro	Leu 1160	Leu	Leu	His	Pro	Ala 1165	Pro	Leu	Asp	Ile	Ala 1170	Phe	Gln	Thr
Val	Ile 1175		Ala	Tyr	Ser	Ser 1180		Gly	Asp	Arg	Arg 1185	Leu	Arg	Ser
Leu	Tyr 1190	Val	Pro	Thr	His	Val 1195		Arg	Val	Thr	Leu 1200	Ile	Pro	Ser
Leu	Cys 1205	Ile	Ser	Ala	Gly	Asn 1210	Ser	Gly	Glu	Thr	Glu 1215	Leu	Ala	Phe
Asp	Thr 1220	Ile	Asn	Thr	His	Asp 1225		Gly	Asp	Phe	Leu 1230	Ser	Gly	Asp
Ile	Thr 1235	Val	Tyr	Asp	Ser	Thr 1240	Lys	Thr	Thr	Leu	Phe 1245	Gln	Val	Asp
Asn	Ile 1250	Val	Phe	Lys	Pro	Phe 1255	Ser	Pro	Pro	Thr	Ala 1260	Ser	Thr	Asp
His	Arg 1265	Ile	Phe	Ala	Lys	Trp 1270	Val	Trp	Gly	Pro	Leu 1275	Thr	Pro	Glu
Lys	Leu 1280	Leu	Glu	Asp	Pro	Ala 1285	Thr	Leu	Ile	Ile	Ala 1290	Arg	Asp	Lys
Glu	Asp 1295	Ile	Leu	Thr	Ile	Glu 1300	Arg	Ile	Val	Tyr	Phe 1305	Tyr	Ile	Lys
Ser	Phe 1310	Leu	Ala	Gln	Ile	Thr 1315	Pro	Asp	Asp	Arg	Gln 1320	Asn	Ala	Asp
Leu	His 1325	Ser	Gln	Lys	Tyr	Ile 1330	Glu	Trp	Cys	Asp	Gln 1335	Val	Gln	Ala
Asp	Ala 1340	Arg	Ala	Gly	His	His 1345	Gln	Trp	Tyr	Gln	Glu 1350	Ser	Trp	Glu
Glu	Asp 1355	Thr	Ser	Val	His	Ile 1360	Glu	Gln	Met	Cys -	Glu 1365	Ser	Asn	Ser
Ser	His 1370	Pro	His	Val	Arg	Leu 1375	Ile	Gln	Arg	Val	Gly 1380	Lys	Glu	Leu





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Arg	Asp 1400	Gly	Leu	Phe	Thr	Glu 1405	Tyr	Tyr	Thr	Asn	Lys 1410	Leu	Ala	Phe
Gly	ser 1415	Ala	Ile	His	Val	Val 1420	Gln	Asp	Leu	Val	Ser 1425	Gln	Ile	Ala
His	Arg 1430		Gln	Ser	Ile	Asp 1435	Ile	Leu	Glu	Ile	Gly 1440		Gly	Thr
Gly	Ile 1445	Ala	Thr	Lys	Arg	Val 1450	Leu	Ala	Ser	Pro	Gln 1455	Leu	Gly	Phe
Asn	Ser 1460		Thr	Сув	Thr	Asp 1465		Ser	Ala	Asp	Val 1470	Ile	Gly	Lys
Ala	Arg 1475	Glu	Gln	Leu	Ser	Glu 1480	Phe	Asp	Gly	Leu	Met 1485	Gln	Phe	Glu
Ala	Leu 1490	Asp	Ile	Asn	Arg	Ser 1495	Pro	Ala	Glu	Gln	Ġly 1500	Phe	Lys	Pro
His	Ser 1505	Tyr	Asp	Leu	Ile	Ile 1510	Ala	Ser	Asp	Val	Leu 1515	His	Ala	Ser
Ser	Asn 1520	Phe	Glu	Glu	Lys	Leu 1525	Ala	His	Ile	Arg	Ser 1530	Leu	Leu	Lys
Pro	Gly 1535		His	Leu		Thr 1540	Phe	Gly	Val	Thr	His 1545	Arg	Glu	Pro
Ala	Arg 1550		Ala	Phe	Ile	Ser 1555	Gly	Leu	Phe		Asp 1560	Arg	Trp	Thr
Gly	Glu 1565		Glu	Thr	Arg	Ala 1570	Leu	Ser	Ala	Ser	Gly 1575	Ser	Val	Asp
Gln	Trp 1580	Glu	His	Thr	Leu	Lys 1585	Arg	Val	Gly	Phe	Ser 1590	Gly	Val	Asp
Ser	Arg 1595	Thr	Leu	Asp	Arg	Glu 1600	Asp	Asp	Leu	Ile	Pro 1605	Ser	Val	Phe
Ser	Thr 1610	His	Ala	Val	Asp	Ala 1615	Thr	Val	Glu	Arg	Leu 1620	Tyr	Asp	Pro
Leu	Ser 1625	Ala	Pro	Leu	Lys	Asp 1630	Ser	Tyr	Pro	Pro	Leu 1635	Val	Val	Ile
Gly	Gly 1640	Glu	Ser	Thr	Lys	Thr 1645	Glu	Arg	Ile	Leu	Asn 1650	Asp	Met	Lys

Ala Ala Leu Pro His Arg His Ile His Ser Val Lys Arg Leu Glu 1655 Ser Val Leu Asp Asp Pro Ala Leu Gln Pro Lys Ser Thr Phe Val 1675 Ile Leu Ser Glu Leu Asp Asp Glu Val Phe Cys Asn Leu Glu Glu 1685 1690 1695 Asp Lys Phe Glu Ala Val Lys Ser Leu Leu Phe Tyr Ala Gly Arg Met Met Trp Leu Thr Glu Asn Ala Trp Ile Asp His Pro His Gln 1715 1720 Ala Ser Thr Ile Gly Met Leu Arg Thr Ile Lys Leu Glu Asn Pro Asp Leu Gly Thr His Val Phe Asp Val Asp Thr Val Glu Asn Leu Asp Thr Lys Phe Phe Val Glu Gln Leu Leu Arg Phe Glu Glu Ser 1760 1765 1770 Asp Asp Gln Leu Leu Glu Ser Ile Thr Trp Thr His Glu Pro Glu 1780 Val Tyr Trp Cys Lys Gly Arg Ala Trp Val Pro Arg Leu Lys Gln 1790 1795 Asp Ile Ala Arg Asn Asp Arg Met Asn Ser Ser Arg Arg Pro Ile 1805 Phe Gly Asn Phe Asn Ser Ser Lys Thr Ala Ile Ala Leu Lys Glu 1820 1825 Ala Arg Gly Ala Ser Ser Ser Met Tyr Tyr Leu Glu Ser Thr Glu 1835 1840 Thr Cys Asp Ser Leu Glu Asp Ala Arg His Ala Gly Lys Ala Thr 1850 1855 1860 Val Arg Val Arg Tyr Ala Leu Pro Gln Ala Ile Arg Val Gly His 1870 1875 Leu Gly Tyr Phe His Val Val Gln Gly Ser Ile Leu Glu Asn Thr 1885 Cys Glu Val Pro Val Val Ala Leu Ala Glu Lys Asn Gly Ser Ile 1895 1900





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L	eu	His 1910	Val	Pro	Arg	Asn	Tyr 1915	Met	His	Ser	Leu	Pro 1920	Asp	Äsn	Met
A	la	Glu 1925	Gly	Glu	Asp	Ser	Ser 1930		Leu	Leu	Ser	Thr 1935	Ala	Ala	Ala
L	eu	Leu 1940	Ala	Glu	Thr	Ile	Leu 1945	Ser	Ser	Ala	Gln	Ser 1950	Phe	Gly	Ser
A	qa.	Ala 1955	Ser	Ile	Leu	Ile	Met 1960	Glu	Pro	Pro	Ile	Phe 1965	Cys	Val	Lys
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A	rg	Leu 2000	His	Ala	Lys	Glu	Thr 2005	Asp	Ala	Arg	Leu	Lys 2010	His	Ser	Leu
P	ro	Thr 2015	Asn	Met	Met	Ala	Phe 2020	Phe	Asp	Leu	Ser	Thr 2025	Asp	Arg	Thr
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С	ys	Phe 2045	Met	Tyr	Ser	Gly	Asp 2050	Tyr	Leu	Ile	Arg	Ser 2055	Thr	Ala	Ser
T	hr	Tyr 2060	Lys	Val	Ser	His	Val 2065	Glu	Asp	Ile	Pro	Ile 2070	Leu	Glu	His
s	er	Val 2075	Ala	Met	Ala		Asn 2080	Thr	Val	Ser	Ala	Ser 2085	Thr	Val	Asp
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G	ln	Leu 2105	Ser	Val	Asn	His	Asn 2110	Asp	Gln	Arg	Phe	Asn 2115	Leu	Ala	Thr
v	al	Ile 2120	Asp	Trp	Lys	Glu	Asn 2125	Glu	Val	Ser	Ala	Arg 2130	Ile	Cys	Pro
Ι	le	Asp 2135	Ser	Gly	Asn	Leu	Phe 2140	Ser	Asn	Lys	Lys	Thr 2145	Tyr	Leu	Leu
V	al	Gly 2150	Leu	Thr	Gly	Asp	Leu 2155	Gly	Arg	Ser	Leu	Cys 2160	Arg	Trp	Met
I	le	Leu 2165	His	Gly	Ala	Arg	His 2170	Val	Val	Leu	Thr	Ser 2175	Arg	Asn	Pro

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Leu Lys Gln Ala Thr Thr Leu Asp Gln Val Arg Gln Ile Val Ile 2435 2440 2445 Asp Gly Leu Ser Glu Lys Leu Arg Val Thr Leu Gln Val Ser Asp 2450 2455 Gly Glu Ser Val Asp Pro Thr Ile Pro Leu Ile Asp Gln Gly Val 2470 Asp Ser Leu Gly Ala Val Thr Val Gly Ser Trp Phe Ser Lys Gln Leu Tyr Leu Asp Leu Pro Leu Leu Arg Val Leu Gly Gly Ala Ser 2495 2500 2505 Val Ala Asp Leu Ala Asp Asp Ala Ala Thr Arg Leu Pro Ala Thr 2515 Ser Ile Pro Leu Leu Gln Ile Gly Asp Ser Thr Gly Thr Ser Asp Ser Gly Ala Ser Pro Thr Pro Thr Asp Ser His Asp Glu Ala 2540 2545 Ser Ser Ala Thr Ser Thr Asp Ala Ser Ser Ala Glu Glu Asp Glu Glu Gln Glu Asp Asp Asn Glu Gln Gly Gly Arg Lys Ile Leu Arg 2570 2580 Arg Glu Arg Leu Ser Leu Gly Gln Glu Tyr Ser Trp Arg Gln Gln 2590 2585 Gln Met Val Lys Asp His Thr Ile Phe Asn Asn Thr Ile Gly Met 2600 2605 Phe Met Lys Gly Thr Ile Asp Leu Asp Arg Leu Arg Arg Ala Leu 2615 2620 Lys Ala Ser Leu Arg Arg His Glu Ile Phe Arg Thr Cys Phe Val Thr Gly Asp Asp Tyr Ser Ser Asp Leu Asn Gly Pro Val Gln Val Val Leu Lys Asn Pro Glu Asn Arg Val His Phe Val Gln Val Asn 2665 Asn Ala Ala Glu Ala Glu Glu Glu Tyr Arg Lys Leu Glu Lys Thr 2675 2680 2685 Asn Tyr Ser Ile Ser Thr Gly Asp Thr Leu Arg Leu Val Asp Phe 2690 2695 2700







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Ser Gly Ser Ile Gly Asn Ala Lys Met Thr Ser Val Leu Ala Ser 2965 Arg Glu Arg Thr Pro Tyr Asp Ile Val Leu Glu Met Trp Asp Asp 2980 Pro Thr Lys Asp Pro Leu Ile His Val Lys Leu Gln Ser Ser Leu 2995 3000 Tyr Gly Pro Glu His Ala Gln Ala Phe Val Asp His Phe Ser Ser 3005 3010 3015 Ile Leu Thr Met Phe Ser Met Asn Pro Ala Leu Lys Leu Ala 3025 <210> 45 <211> 7692 <212> DNA <213> Penicillium citrinum <220> CDS <221> (1)..(7692) <222> atg aac aat acc ccc gcc gta acc gca acc gca acc gca acc Met Asn Asn Thr Pro Ala Val Thr Ala Thr Ala Thr Ala Thr Ala Thr 48 gea ace gea atg gea gge teg get tge tet aae aca tee aeg eee att 96 Ala Thr Ala Met Ala Gly Ser Ala Cys Ser Asn Thr Ser Thr Pro Ile gcc ata gtt gga atg gga tgt cga ttt gct gga gat gca acg agt cca Ala Ile Val Gly Met Gly Cys Arg Phe Ala Gly Asp Ala Thr Ser Pro 144 cag aag ctt tgg gaa atg gtt gaa aga gga ggc agt gcc tgg tct aag Gln Lys Leu Trp Glu Met Val Glu Arg Gly Gly Ser Ala Trp Ser Lys 192 gtc ccc tcc tcg cga ttc aat gtg aga gga gta tac cac ccg aat ggc Val Pro Ser Ser Arg Phe Asn Val Arg Gly Val Tyr His Pro Asn Gly 240 gaa agg gtc ggg tcc acc cac gta aag ggt gga cac ttc atc gac gag 288 Glu Arg Val Gly Ser Thr His Val Lys Gly Gly His Phe Ile Asp Glu 85 90 gat cet get tta ttt gae gee geg tte tte aac atg acc aca gag gte 336 Asp Pro Ala Leu Phe Asp Ala Ala Phe Phe Asn Met Thr Thr Glu Val gcc agc tgc atg gat ccg cag tat cgg ctt atg ctt gag gtg gtc tac 384 Ala Ser Cys Met Asp Pro Gln Tyr Arg Leu Met Leu Glu Val Val Tyr gaa teg etg gag agt gee ggt ate ace ate gat ggt atg gea gge tet Glu Ser Leu Glu Ser Ala Gly Ile Thr Ile Asp Gly Met Ala Gly Ser 432 aat acg tcg gtg ttt ggg ggt gtc atg tac cac gac tat cag gat tcg Asn Thr Ser Val Phe Gly Gly Val Met Tyr His Asp Tyr Gln Asp Ser 480 155 160





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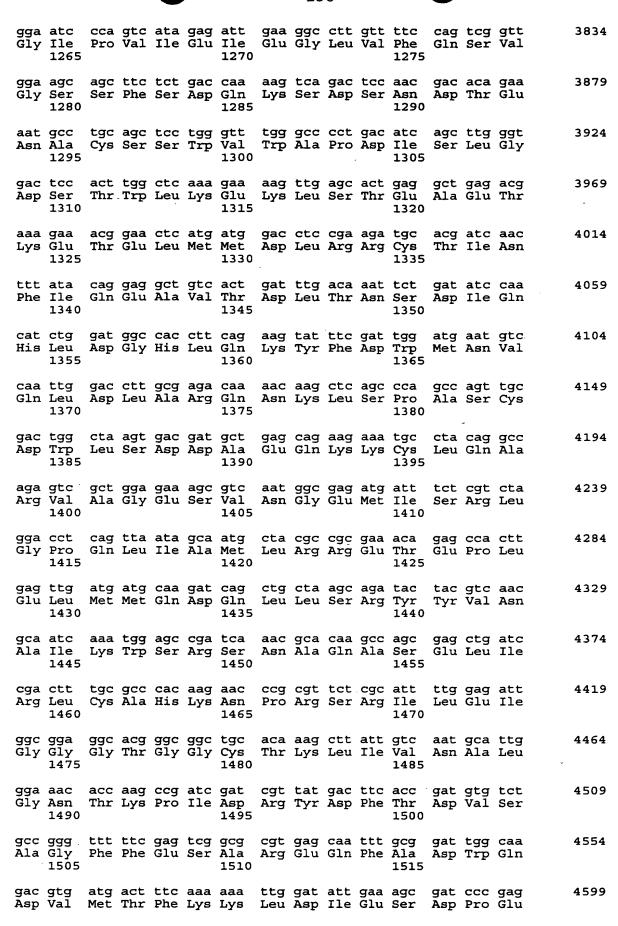
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995 1000 1005

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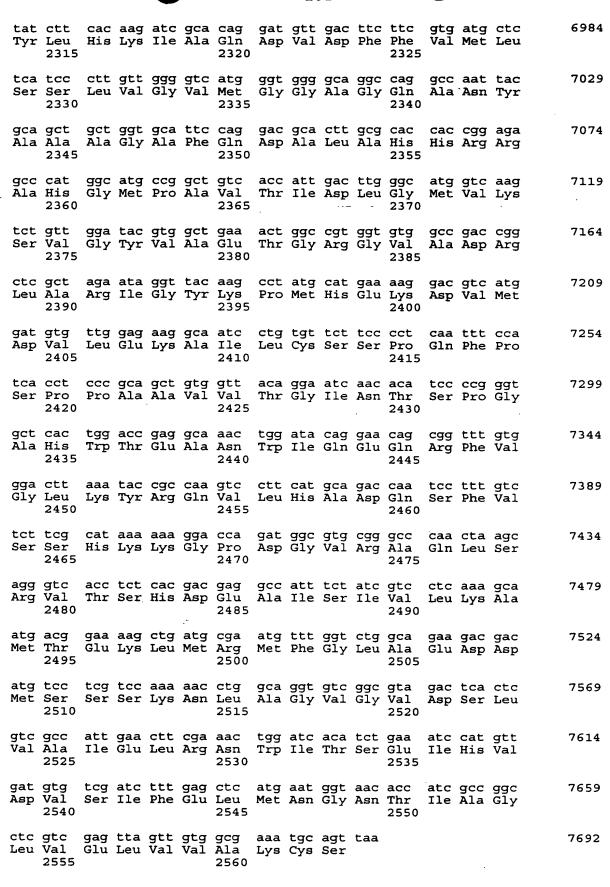
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	cta Leu 1940															5859
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tcg Ser		agg Arg	aat Asn	gac Asp	tta Leu	ttc Phe	gtc Val	gac Asp	ggc Gly	atc Ile	aaa Lys	gcc Ala	tac Tyr	acg Thr		6174





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	ctc Leu 2075		gca Ala	agc Ser	ttt Phe	gac Asp 2080	tgc Cys	atg Met	gcc Ala	gaa Glu	ttc Phe 2085	ggc Gly	aga Arg			6264
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Gln Lys Leu Trp Glu Met Val Glu Arg Gly Gly Ser Ala Trp Ser Lys 50 55 60

Val Pro Ser Ser Arg Phe Asn Val Arg Gly Val Tyr His Pro Asn Gly 65 70 75 80

Glu Arg Val Gly Ser Thr His Val Lys Gly Gly His Phe Ile Asp Glu 85 90 95

Asp Pro Ala Leu Phe Asp Ala Ala Phe Phe Asn Met Thr Thr Glu Val

Ala Ser Cys Met Asp Pro Gln Tyr Arg Leu Met Leu Glu Val Val Tyr 115 120 125

Glu Ser Leu Glu Ser Ala Gly Ile Thr Ile Asp Gly Met Ala Gly Ser 130 135 140

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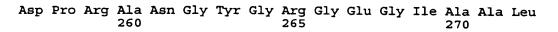
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Ile Val Ile Gly Ala Asn Leu Leu Leu Asn Pro Asp Val Phe Val Thr 225 230 235 240

Met Ser Asn Leu Gly Phe Leu Ser Pro Asp Gly Ile Ser Tyr Ser Phe 245 250 255



Val Ile Lys Ala Leu Pro Asn Ala Leu Arg Asp Gln Asp Pro Ile Arg 275 280 285

Ala Val Ile Arg Glu Thr Ala Leu Asn Gln Asp Gly Lys Thr Pro Ala 290 295 300

Ile Thr Ala Pro Ser Asp Val Ala Gln Lys Ser Leu Ile Gln Glu Cys 305 310 315 320

Tyr Asp Lys Ala Gly Leu Asp Met Ser Leu Thr Ser Tyr Val Glu Ala 325 330 335

His Gly Thr Gly Thr Pro Thr Gly Asp Pro Leu Glu Ile Ser Ala Ile 340 345 350

Ser Ala Ala Phe Lys Gly His Pro Leu His Leu Gly Ser Val Lys Ala 355 360 365

Asn Ile Gly His Thr Glu Ala Ala Ser Gly Leu Ala Ser Ile Ile Lys 370 375 380

Val Ala Leu Ala Leu Glu Lys Gly Leu Ile Pro Pro Asn Ala Arg Phe 385 390 395 400

Leu Gln Lys Asn Ser Lys Leu Met Leu Asp Gln Lys Asn Ile Lys Ile 405 410 415

Pro Met Ser Ala Gln Asp Trp Pro Val Lys Asp Gly Thr Arg Arg Ala 420 425 430

Ser Val Asn Asn Phe Gly Phe Gly Gly Ser Asn Ala His Val Ile Leu 435 440 445

Glu Ser Tyr Asp Arg Ala Ser Leu Ala Leu Pro Glu Asp Gln Val His 450 455 460

Val Asn Gly Asn Ser Glu His Gly Arg Val Glu Asp Gly Ser Lys Gln 465 470 475 480

Ser Arg Ile Tyr Val Val Arg Ala Lys Asp Glu Gln Ala Cys Arg Arg 485 490 495

Thr Ile Ala Ser Leu Arg Asp Tyr Ile Lys Ser Val Ala Asp Ile Asp 500 505 510

Gly Glu Pro Phe Leu Ala Ser Leu Ala Tyr Thr Leu Gly Ser Arg Arg 515 520 525

Ser Ile Leu Pro Trp Thr Ser Val Tyr Val Ala Asp Ser Leu Gly Gly 530 540





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810





Asp Leu Lys Leu Leu Asp Pro Thr His Trp Met Asp Ser Met Leu 820 825 830

Gln Pro Val Glu Phe Glu Ser Ser Leu Arg Glu Met Cys Phe Asp Pro 835 840 845

Asn Thr Lys Glu Lys Ala Val Asp Val Ile Ile Glu Ile Gly Pro His 850 855 860

Gly Ala Leu Gly Gly Pro Ile Asn Gln Val Met Gln Asp Leu Gly Leu 865 870 875 880

Lys Gly Thr Asp Ile Asn Tyr Leu Ser Cys Leu Ser Arg Gly Arg Ser 885 890 895

Ser Leu Glu Thr Met Tyr Arg Ala Ala Thr Glu Leu Ile Ser Lys Gly 900 905 910

Tyr Gly Leu Lys Met Asp Ala Ile Asn Phe Pro His Gly Arg Lys Glu 915 920 925

Pro Arg Val Lys Val Leu Ser Asp Leu Pro Ala Tyr Pro Trp Asn His 930 935 940

Gln Thr Arg Tyr Trp Arg Glu Pro Arg Gly Ser Arg Glu Ser Lys Gln 945 950 955 960

Arg Thr His Pro Pro His Thr Leu Ile Gly Ser Arg Glu Ser Leu Ser 965 970 975

Pro His Phe Ala Pro Lys Trp Lys His Val Leu Arg Leu Ser Asp Ile 980 985 990

Pro Trp Ile Arg Asp His Val Val Gly Ser Ser Ile Ile Phe Pro Gly 995 1000 1005

Ala Gly Phe Ile Ser Met Ala Ile Glu Gly Phe Ser Gln Val Cys 1010 1015 1020

Pro Pro Val Ala Gly Ala Ser Ile Asn Tyr Asn Leu Arg Asp Val 1025 1030 1035

Glu Leu Ala Gln Ala Leu Ile Ile Pro Ala Asp Ala Glu Ala Glu 1040 1045 1050

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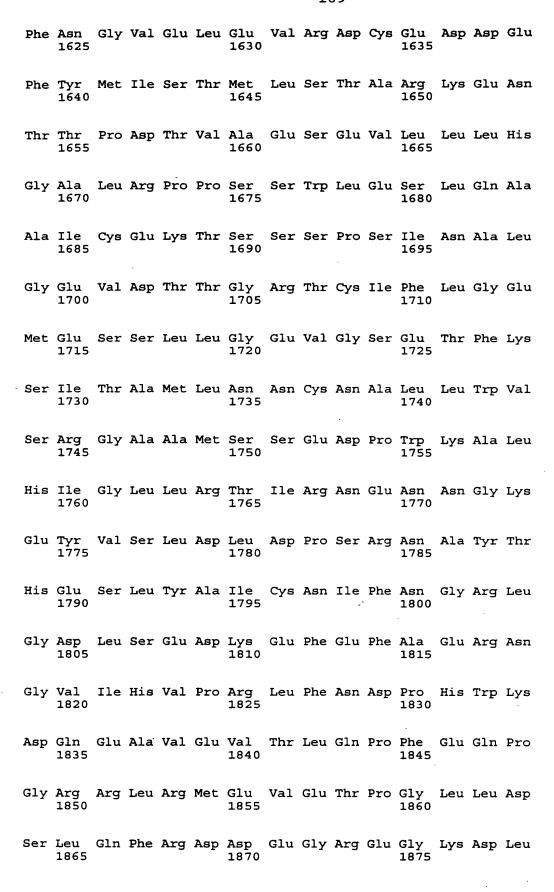
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Gln	Ala 1235	Ser	Ile	Lys	Asp	Arg 1240	Asn	Ser	Gln	Ser	Phe 1245	Ser	Thr	Asp
Leu	Ala 1250	Val	Phe	qaA	Asp	Tyr 1255	Asp	Ser	Gly	Ser	Ser 1260	Pro	Ser	Asp
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Gly	Ser 1280	Ser	Phe	Ser	Asp	Gln 1285	Lys	Ser	Asp	Ser	Asn 1290	Asp	Thr	Glu
Asn	Ala 1295	Cys	Ser	Ser	Trp	Val 1300	Trp	Ala	Pro	Asp	Ile 1305	Ser	Leu	Gly
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Lys	Glu 1325	Thr	Glu	Leu	Met	Met 1330	Asp	Leu	Arg	Arg	Cys 1335	Thr	Ile	Asn
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Pro Asp Asp Trp Val Glu Ile Glu Pro Lys Ala Phe Gly Leu Asn 1880 1885 1890

Phe Arg Asp Val Met Val Ala Met Gly Gln Leu Glu Ala Asn Arg 1895 1900 1905

Val Met Gly Phe Glu Cys Ala Gly Val Ile Thr Lys Leu Gly Gly 1910 1915 1920

Ala Ala Ala Ser Gln Gly Leu Arg Leu Gly Asp Arg Val Cys 1925 1930 1935

Ala Leu Leu Lys Gly His Trp Ala Thr Arg Thr Gln Thr Pro Tyr 1940 1945 1950

Thr Asn Val Val Arg Ile Pro Asp Glu Met Gly Phe Pro Glu Ala 1955 1960 1965

Ala Ser Val Pro Leu Ala Phe Thr Thr Ala Tyr Ile Ala Leu Tyr 1970 1975 1980

Thr Thr Ala Lys Leu Arg Arg Gly Glu Arg Val Leu Ile His Ser 1985 1990 1995

Gly Ala Gly Gly Val Gly Gln Ala Ala Ile Ile Leu Ser Gln Leu 2000 2005 2010

Ala Gly Ala Glu Val Phe Val Thr Ala Gly Thr Gln Ala Lys Arg 2015 2020 2025

Asp Phe Val Gly Asp Lys Phe Gly Ile Asn Pro Asp His Ile Phe 2030 2040

Ser Ser Arg Asn Asp Leu Phe Val Asp Gly Ile Lys Ala Tyr Thr 2045 2050 2055

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Met Leu Pro Phe Thr Arg Asp Val Ser Phe Thr Ser Ile Asp Leu 2105 2110 2115

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Asn His Val Thr Lys Leu Leu Glu Thr Lys Ala Ile Gly Leu Ile 2135 2140 2145

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Val	Ser 2180		Asp	Glu	Leu	Val 2185		Val	Gly	Asp	Gly 2190		Phe	Ser
Leu	Lys 2195		Lys	Pro	Asp	Ser 2200	Ser	Tyr	Leu	Val	Ala 2205		Gly	Leu
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Leu	Cys 2270	Glu	Glu	Ala	His	Ala 2275	Pro	Pro	Ile	Arg	Gly 2280	Ile	Ile	Gln
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Tyr	Leu 2315	His	Lys	Ile	Ala	Gln 2320	Asp	Val	Asp	Phe	Phe 2325	Val	Met	Leu
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Ser	Val 2375	Gly	Tyr	Val	Ala	Glu 2380	Thr	Gly	Arg	Gly	Val 2385	Ala	Asp	Arg
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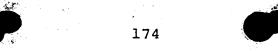


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Lys	Gly	Val 275	Gln	Pro	Pro	Gln	Tyr 280	Val	gat Asp	Thr	Met	Gln 285	Trp	Phe	Ğlu	864
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345 tto aag otg aag oto oto gac ago tgo atg aaa gag acg cag cga atc 1104 Phe Lys Leu Lys Leu Leu Asp Ser Cys Met Lys Glu Thr Gln Arg Ile 355 360 aag deg gte gag tge gee aet atg ege agt aee get ete aga gae ate 1152 Lys Pro Val Glu Cys Ala Thr Met Arg Ser Thr Ala Leu Arg Asp Ile 375 act cta tcc aat ggc ctc ttc att ccc aag ggc gag ttg gcc gct gtg 1200 Thr Leu Ser Asn Gly Leu Phe Ile Pro Lys Gly Glu Leu Ala Ala Val get gea gae ege atg aac aac eet gat gtg tgg gaa aac eee gaa aat 1248 Ala Ala Asp Arg Met Asn Asn Pro Asp Val Trp Glu Asn Pro Glu Asn 405 tat gat ccc tac cga ttt atg cgc atg cgc gag gat cca gac aag gcc 1296 Tyr Asp Pro Tyr Arg Phe Met Arg Met Arg Glu Asp Pro Asp Lys Ala tto acc got caa ttg gag aat acc aac ggt gat cac atc ggc ttc ggc 1344 Phe Thr Ala Gln Leu Glu Asn Thr Asn Gly Asp His Ile Gly Phe Gly 435 440 tgg aac cca cgc gct tgt ccc ggg cgg ttc ttc gcc tcg aag gaa atc 1392 Trp Asn Pro Arg Ala Cys Pro Gly Arg Phe Phe Ala Ser Lys Glu Ile aag att ctc ctc gct cat ata ctg att cag tat gat gtg aag cct gta 1440 Lys Ile Leu Leu Ala His Ile Leu Ile Gln Tyr Asp Val Lys Pro Val 470 475 cca gga gac gat gac aaa tac tac cgt cac gct ttt agc gtt cgt atg 1488 Pro Gly Asp Asp Lys Tyr Tyr Arg His Ala Phe Ser Val Arg Met 485 cat cca acc aca aag ctc atg gta cgc cgg cgc aac gag gac atc ccg His Pro Thr Thr Lys Leu Met Val Arg Arg Arg Asn Glu Asp Ile Pro 1536 500 505 ctc cct cat gac cgg tgc taa 1557 Leu Pro His Asp Arg Cys 515 <210> 48 <211> 518 <212> PRT <213> Penicillium citrinum <400> Met Leu Gly Gln Val Leu Leu Thr Val Glu Ser Tyr Gln Trp Val Ser

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Lys Trp Trp Glu Leu Thr Thr Met Arg Ala Arg Gln Asp Phe Asp Thr 50 55 60





Tyr Gly Pro Ser Trp Ile Glu Ala Trp Phe Ser Lys Asn Asp Lys Pro 65 70 75 80

Leu Arg Phe Ile Val Asp Ser Gly Tyr Cys Thr Ile Leu Pro Ser Ser 85 90 95

Met Ala Asp Glu Phe Arg Lys Ile Lys Asp Met Cys Met Tyr Lys Phe
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Leu Ala Asp Asp Phe His Ser His Leu Pro Gly Phe Asp Gly Phe Lys
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Glu Ile Cys Gln Asp Ala His Leu Val Asn Lys Val Val Leu Asn Gln 130 135 140

Leu Gln Thr Gln Ala Pro Lys Tyr Thr Lys Pro Leu Ala Thr Leu Ala 145 150 155 160

Asp Ala Thr Ile Ala Lys Leu Phe Gly Lys Ser Glu Glu Trp Gln Thr 165 170 175

Ala Pro Val Tyr Ser Asn Gly Leu Asp Leu Val Thr Arg Thr Val Thr 180 185 190

Leu Ile Met Val Gly Asp Lys Ile Cys His Asn Glu Glu Trp Leu Asp 195 200 205

Ile Ala Lys Asn His Ala Val Ser Val Ala Val Gln Ala Arg Gln Leu 210 215 220

Arg Val Trp Pro Met Leu Leu Arg Pro Leu Ala His Trp Phe Gln Pro 225 230 235 240

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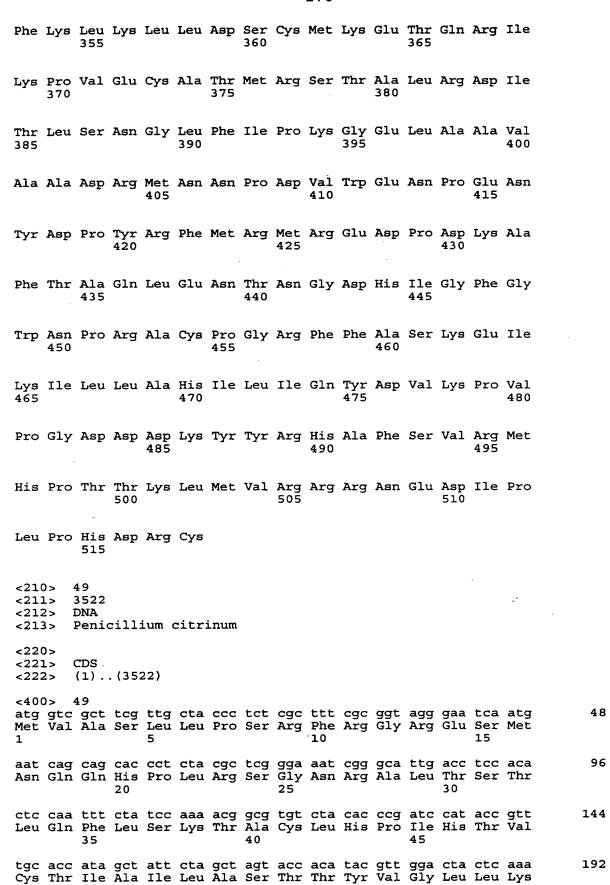
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Asp Thr Ala Asp Gly Arg Trp Tyr Asp Val Ala Gly Ala Gln Leu Ala 290 295 300

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Leu Val Asp Ile Ala Arg His Pro Asp Leu Ile Gln Pro Leu Arg Gln 325 330 335

Glu Ile Arg Thr Val Ile Gly Glu Gly Gly Trp Thr Pro Ala Ser Leu 340 345 350







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tct Ser	ttg Leu	gtc Val	gaa Glu	gga Gly 85	agt Ser	cga Arg	agc Ser	ttg Leu	atc Ile 90	acc Thr	ggc Gly	cca Pro	cag Gln	aat Asn 95	ggc	288
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								ccc Pro 185								576
								atg Met								624
								cgc Arg								672
gat Asp 225	acc Thr	tgg Trp	aca Thr	gag Glu	tct Ser 230	ctt Leu	gat Asp	ctt Leu	atc Ile	aag Lys 235	agc Ser	gct Ala	caa Gln	acg Thr	ctc Leu 240	720
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gaa Glu 305	ggc Gly	ctc Leu	ccc Pro	ttc Phe	ttg Leu 310	gtg Val	gtg Val	atc Ile	gtt Val	ggc Gly 315	ttt Phe	gag Glu	aag Lys	agc Ser	atc Ile 320	960
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								cag Gln								1200
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								tcg Ser 505								1536
			Leu			Ser	Āla	att Ile	Lys	Pro	Pro	Leu	Ğlü			1584
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ctg Leu	aac Asn	agc Ser	tat Tyr	ctg Leu	ttc Phe	aag Lys	gcc Ala	gcc Ala	aga Arg	ctg Leu	gga Gly	atc Ile	aaa Lys	gat Asp	cct Pro	1872





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tga

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Cys Thr Ile Ala Ile Leu Ala Ser Thr Thr Tyr Val Gly Leu Leu Lys

Asp Ser Phe Phe His Gly Pro Ala Asn Val Asp Lys Ala Glu Trp Gly

Ser Leu Val Glu Gly Ser Arg Ser Leu Ile Thr Gly Pro Gln Asn Gly

Trp Lys Trp Gln Ser Phe Asp Gly Asp Ala Asp Val Leu Gly Asp Phe

Asn His Gln Ala Leu Met Thr Leu Val Phe Pro Gly Ser Tyr Gly Val

Ala Ser Gln Ala Ala Ser Pro Phe Leu Ala Pro Leu Pro Val Asn Leu

Ser Val Ile Asp Leu Pro Ser Thr Ser Ser Pro Leu Thr Ala Tyr Ser

Lys Asp Lys Val Phe Ala Phe Ser Val Glu Tyr Ser Ser Ala Pro Glu 165

Leu Val Ala Ala Val Gln Glu Ile Pro Asn Asn Ser Ala Asp Leu Lys 180 185

Leu Gln Glu Thr Gln Leu Ile Glu Met Glu Arg Gln Met Trp Ile Met

Lys Ala Ala Arg Ala His Thr Lys Arg Ser Leu Ala Gln Trp Val His

Asp Thr Trp Thr Glu Ser Leu Asp Leu Ile Lys Ser Ala Gln Thr Leu 235

E.





Asp	Val	Val	Val	Met 245	Val	Leu	Gly	Tyr	Ile 250	Ser	Met	His	Leu	Thr 255	Phe
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Asp	Val 290	Ala	Ile	Arg	Lėu	Gly 295	Val	Pro	Met	Ser	Met 300	Arg	Leu	Leu	Ser
Glu 305	Gly	Leu	Pro	Phe	Leu 310	Val	Val	Ile	Val	Gly 315	Phe	Glu	Lys	Ser	Ile 320
Thr	Leu	Thr	Arg	Ala 325	Val	Leu	Ser	Tyr	Ala 330	Val	Gln	His	Arg	Lys 335	Pro
Gln	Lys	Ile	Gln 340	Ser	Asp	Gln	Gly	Ser 345	Val	Thr	Ala	Ile	Ala 350	Glu	Ser
Thr	Ile	Asn 355	Tyr	Ala	Val	Arg	Ser 360	Ala	Ile	Arg	Glu	Lys 365	Gly	Tyr	Asn
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Leu	Ile	Leu	Phe	Phe 405	Asp	Суз	Leu	Leu	Leu 410	Phe	Thr	Phe	Tyr	Thr 415	Ala
Ile	Leu	Ser	Ile 420	Lys	Leu	Glu	Val	Asn 425	Arg	Leu	Lys	Arg	His 430	Île	Asn
Met	Arg	Tyr 435	Ala	Leu	Glu	Asp	Glu 440	Gly	Leu	Ser	Gln	Arg 445	Thr	Ala	Glu
Ser	Val 450	Ala	Thr	Ser	Asn	Asp 455	Ala	Gln	Asp	Ser	Ala 460	Arg	Thr	Tyr	Leu
Phe 465	Gly	Asn	Asp	Met	Lys 470	Gly	Ser	Ser	Val	Pro 475	Lys	Phe	Lys	Phe	Trp 480
Met	Val	Val	Gly	Phe 485	Leu	Ile	Val	Asn	Leu 490	Val	Asn	Ile	Gly	Ser 495	Thr
Leu	Phe	Gln	Ala 500	Ser	Ser	Ser	Gly	Ser 505	Leu	Ser	Ser	Ile	Ser 510	Ser	Trp





Thr Glu Ser Leu Ser Gly Ser Ala Ile Lys Pro Pro Leu Glu Pro Phe 515 520 525

Lys Val Ala Gly Ser Gly Leu Asp Glu Leu Leu Phe Gln Ala Arg Gly 530 535 540

Arg Gly Gln Ser Thr Met Val Thr Val Leu Ala Pro Ile Lys Tyr Glu 545 550 555 560

Leu Glu Tyr Pro Ser Ile His Arg Gly Thr Ser Gln Leu His Glu Tyr
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Gly Val Gly Lys Met Val Gly Ser Leu Leu Thr Ser Leu Glu Asp 580 585 590

Pro Val Leu Ser Lys Trp Val Phe Val Ala Leu Ala Leu Ser Val Ala 595 600 605

Leu Asn Ser Tyr Leu Phe Lys Ala Ala Arg Leu Gly Ile Lys Asp Pro 610 615 620

Asn Leu Pro Ser His Pro Val Asp Pro Val Glu Leu Asp Gln Ala Glu 625 630 635 640

Ser Phe Asn Ala Gln Asn Gln Thr Pro Gln Ile Gln Ser Ser Leu 645 650 655

Gln Ala Pro Gln Thr Arg Val Phe Thr Pro Thr Thr Thr Asp Ser Asp 660 665 670

Ser Asp Ala Ser Leu Val Leu Ile Lys Ala Ser Leu Lys Val Thr Lys 675 680 685

Arg Ala Glu Gly Lys Thr Ala Thr Ser Glu Leu Pro Val Ser Arg Thr 690 695 700

Gln Ile Glu Leu Asp Asn Leu Leu Lys Gln Asn Thr Ile Ser Glu Leu 705 710 715 720

Asn Asp Glu Asp Val Val Ala Leu Ser Leu Arg Gly Lys Val Pro Gly 725 730 735

Tyr Ala Leu Glu Lys Ser Leu Lys Asp Cys Thr Arg Ala Val Lys Val 740 745 750

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Met Leu Glu-His Ser Lys Leu Pro Tyr Glu Asn Tyr Ala Trp Glu Arg
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Val Leu Gly Ala Cys Cys Glu Asn Val Ile Gly Tyr Met Pro Val Pro 785 790 795 800



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Pro Met Ala Thr Thr Glu Gly Val Leu Val Ala Ser Ala Ser Arg Gly 820 825 830

Ser Lys Ala Ile Asn Leu Gly Gly Gly Ala Val Thr Val Leu Thr Gly 835 840 845

Asp Gly Met Thr Arg Gly Pro Cys Val Lys Phe Asp Val Leu Glu Arg 850 855 860

Ala Gly Ala Ala Lys Ile Trp Leu Asp Ser Asp Val Gly Gln Thr Val 865 870 875 880

Met Lys Glu Ala Phe Asn Ser Thr Ser Arg Phe Ala Arg Leu Gln Ser 885 890 895

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Thr Thr Gly Asp Ala Met Gly Met Asn Met Ile Ser Lys Gly Val Glu 915 920 925

His Ala Leu Asn Val Met Ala Thr Glu Ala Gly Phe Ser Asp Met Asn 930 935 940

Ile Ile Thr Leu Ser Gly Asn Tyr Cys Thr Asp Lys Lys Pro Ser Ala 945 950 955 960

Leu Asn Trp Ile Asp Gly Arg Gly Lys Gly Ile Val Ala Glu Ala Ile 965 970 975

Ile Pro Ala Asn Val Val Arg Asp Val Leu Lys Ser Asp Val Asp Ser 980 985 990

Met Val Gln Leu Asn Ile Ser Lys Asn Leu Ile Gly Ser Ala Met Ala 995 1000 1005

Gly Ser Val Gly Gly Phe Asn Ala Gln Ala Ala Asn Leu Ala Ala 1010 1015 1020

Ala Ile Phe Ile Ala Thr Gly Gln Asp Pro Ala Gln Val Val Glu 1025 1030 1035

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Gln	Leu 1100	Ala	Arg	Ile	Ile	Gly 1105	Ser	Ala	Val	Leu	Ala 1110	Gly	Glu	Leu		
Ser	Leu 1115	Cys	Ala	Ala	Leu	A la 1120	Ala	Gly	His	Leų	Val 1125	Lys	Ala	His		
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